

761-4_ST25
SEQUENCE LISTING

<110> Scil Proteins GmbH

<120> UBIQUITIN MOIETIES AS A MEANS FOR PROLONGING SERUM HALF-LIFE

<130> 761-4

<160> 48

<170> PatentIn version 3.5

<210> 1

<211> 76

<212> PRT

<213> Homo sapiens

<400> 1

Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Gly Gly
65 70 75

<210> 2

<211> 76

<212> PRT

<213> Artificial Sequence

<220>

<223> ubiquitin mutein (F45W/G75A/G76A), start sequence for mutagenesis

<400> 2

Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala
65 70 75

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<210> 3
 <211> 155
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Affilin

<400> 3

Met Arg Ile Trp Val His Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
 1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
 20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys
 35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Asn Pro Lys
 50 55 60

Leu Ser Leu His Leu Val Leu Arg Leu Arg Ala Ala Gly Ile Gly Met
 65 70 75 80

Gln Ile Phe Val His Thr Gln Thr Gly Lys Thr Ile Thr Leu Glu Val
 85 90 95

Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys
 100 105 110

Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys Gln
 115 120 125

Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gly Trp Gln Ala
 130 135 140

Pro Leu His Leu Val Leu Arg Leu Arg Ala Ala
 145 150 155

<210> 4
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> peptide linker

<400> 4

Ser Gly Gly Gly Gly
 1 5

<210> 5
 <211> 10
 <212> PRT

<213> Artificial Sequence

<220>

<223> peptide linker

<400> 5

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
1 5 10

<210> 6

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> peptide linker

<400> 6

Gly Gly Gly Ser Gly Gly Gly Ser Gly Gly Gly Ser
1 5 10

<210> 7

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> peptide linker

<400> 7

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

<210> 8

<211> 3

<212> PRT

<213> Artificial Sequence

<220>

<223> peptide linker

<400> 8

Gly Ile Gly
1

<210> 9

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> peptide linker

<400> 9

Ser Gly Gly Gly Gly Ile Gly
1 5

<210> 10

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<211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> peptide linker

<400> 10

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ile Gly
 1 5 10

<210> 11
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> peptide linker

<400> 11

Gly Gly Gly Gly Ser
 1 5

<210> 12
 <211> 4
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> basic linker sequence

<400> 12

Gly Gly Gly Ser
 1

<210> 13
 <211> 4
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> basic linker sequence

<400> 13

Ser Gly Gly Gly
 1

<210> 14
 <211> 616
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Ubi6-Affilin

<400> 14

Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
 1 5 10 15

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Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
 20 25 30
 Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
 35 40 45
 Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
 50 55 60
 Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala Met Gln Ile Phe
 65 70 75 80
 Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Pro Ser
 85 90 95
 Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile
 100 105 110
 Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys Gln Leu Glu Asp
 115 120 125
 Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His
 130 135 140
 Leu Val Leu Arg Leu Arg Ala Ala Met Gln Ile Phe Val Lys Thr Leu
 145 150 155 160
 Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Pro Ser Asp Thr Ile Glu
 165 170 175
 Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln
 180 185 190
 Gln Arg Leu Ile Phe Ala Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu
 195 200 205
 Ser Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His Leu Val Leu Arg
 210 215 220
 Leu Arg Ala Ala Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr
 225 230 235 240
 Ile Thr Leu Glu Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala
 245 250 255
 Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile
 260 265 270
 Phe Ala Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn
 275 280 285

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Ile Gln Lys Glu Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala
 290 295 300

Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
 305 310 315 320

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
 325 330 335

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
 340 345 350

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
 355 360 365

Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala Met Gln Ile Phe
 370 375 380

Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Pro Ser
 385 390 395 400

Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile
 405 410 415

Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys Gln Leu Glu Asp
 420 425 430

Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His
 435 440 445

Leu Val Leu Arg Leu Arg Ala Ala Gly Gly Gly Ser Met Arg Ile
 450 455 460

Trp Val His Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Pro
 465 470 475 480

Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly
 485 490 495

Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys Gln Leu Glu
 500 505 510

Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Asn Pro Lys Leu Ser Leu
 515 520 525

His Leu Val Leu Arg Leu Arg Ala Ala Gly Ile Gly Met Gln Ile Phe
 530 535 540

Val His Thr Gln Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Pro Ser
 545 550 555 560

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Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile
565 570 575

Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys Gln Leu Glu Asp
580 585 590

Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gly Trp Gln Ala Pro Leu His
595 600 605

Leu Val Leu Arg Leu Arg Ala Ala
610 615

<210> 15
<211> 464
<212> PRT
<213> Artificial Sequence

<220>
<223> Ubi4-Affilin

<400> 15

Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala Met Gln Ile Phe
65 70 75 80

Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Pro Ser
85 90 95

Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile
100 105 110

Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys Gln Leu Glu Asp
115 120 125

Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His
130 135 140

Leu Val Leu Arg Leu Arg Ala Ala Met Gln Ile Phe Val Lys Thr Leu
145 150 155 160

Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Pro Ser Asp Thr Ile Glu
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Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln
180 185 190

Gln Arg Leu Ile Phe Ala Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu
195 200 205

Ser Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His Leu Val Leu Arg
210 215 220

Leu Arg Ala Ala Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr
225 230 235 240

Ile Thr Leu Glu Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala
245 250 255

Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile
260 265 270

Phe Ala Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn
275 280 285

Ile Gln Lys Glu Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala
290 295 300

Gly Gly Gly Gly Ser Met Arg Ile Trp Val His Thr Leu Thr Gly Lys
305 310 315 320

Thr Ile Thr Leu Glu Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys
325 330 335

Ala Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu
340 345 350

Ile Trp Ala Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr
355 360 365

Asn Ile Asn Pro Lys Leu Ser Leu His Leu Val Leu Arg Leu Arg Ala
370 375 380

Ala Gly Ile Gly Met Gln Ile Phe Val His Thr Gln Thr Gly Lys Thr
385 390 395 400

Ile Thr Leu Glu Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala
405 410 415

Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile
420 425 430

Trp Ala Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn

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435

440

445

Ile Gly Trp Gln Ala Pro Leu His Leu Val Leu Arg Leu Arg Ala Ala
 450 455 460

<210> 16
 <211> 325
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Ubi2-IFN

<400> 16

Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
 1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
 20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys
 35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
 50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala Gly Ile Gly Met
 65 70 75 80

Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val
 85 90 95

Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys
 100 105 110

Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys Gln
 115 120 125

Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu Ser
 130 135 140

Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala Ser Gly Gly Gly Gly
 145 150 155 160

Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
 165 170 175

Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
 180 185 190

Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
 195 200 205

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Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
210 215 220

Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
225 230 235 240

Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
245 250 255

Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
260 265 270

Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
275 280 285

Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
290 295 300

Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
305 310 315 320

Leu Arg Ser Lys Glu
325

<210> 17
<211> 662
<212> PRT
<213> Artificial Sequence

<220>
<223> Ubi2-sCTNF

<400> 17

Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala Gly Ile Gly Met
65 70 75 80

Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val
85 90 95

Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys
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100

105

110

Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys Gln
 115 120 125

Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu Ser
 130 135 140

Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala Gly Gly Gly Gly Ser
 145 150 155 160

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Leu Arg Ser Ser Ser Gln
 165 170 175

Asn Ser Ser Asp Lys Pro Val Ala His Val Val Ala Asn His Gln Val
 180 185 190

Glu Glu Gln Leu Glu Trp Leu Ser Gln Arg Ala Asn Ala Leu Leu Ala
 195 200 205

Asn Gly Met Asp Leu Lys Asp Asn Gln Leu Val Val Pro Ala Asp Gly
 210 215 220

Leu Tyr Leu Val Tyr Ser Gln Val Leu Phe Lys Gly Gln Gly Cys Pro
 225 230 235 240

Asp Tyr Val Leu Leu Thr His Thr Val Ser Arg Phe Ala Ile Ser Tyr
 245 250 255

Gln Glu Lys Val Asn Leu Leu Ser Ala Val Lys Ser Pro Cys Pro Lys
 260 265 270

Asp Thr Pro Glu Gly Ala Glu Leu Lys Pro Trp Tyr Glu Pro Ile Tyr
 275 280 285

Leu Gly Gly Val Phe Gln Leu Glu Lys Gly Asp Gln Leu Ser Ala Glu
 290 295 300

Val Asn Leu Pro Lys Tyr Leu Asp Phe Ala Glu Ser Gly Gln Val Tyr
 305 310 315 320

Phe Gly Val Ile Ala Leu Gly Gly Gly Ser Gly Gly Gly Ser Gly Gly
 325 330 335

Gly Ser Leu Arg Ser Ser Ser Gln Asn Ser Ser Asp Lys Pro Val Ala
 340 345 350

His Val Val Ala Asn His Gln Val Glu Glu Gln Leu Glu Trp Leu Ser
 355 360 365

Gln Arg Ala Asn Ala Leu Leu Ala Asn Gly Met Asp Leu Lys Asp Asn

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380

370

375

Gln Leu Val Val Pro Ala Asp Gly Leu Tyr Leu Val Tyr Ser Gln Val
385 390 395 400

Leu Phe Lys Gly Gln Gly Cys Pro Asp Tyr Val Leu Leu Thr His Thr
405 410 415

Val Ser Arg Phe Ala Ile Ser Tyr Gln Glu Lys Val Asn Leu Leu Ser
420 425 430

Ala Val Lys Ser Pro Cys Pro Lys Asp Thr Pro Glu Gly Ala Glu Leu
435 440 445

Lys Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu
450 455 460

Lys Gly Asp Gln Leu Ser Ala Glu Val Asn Leu Pro Lys Tyr Leu Asp
465 470 475 480

Phe Ala Glu Ser Gly Gln Val Tyr Phe Gly Val Ile Ala Leu Gly Gly
485 490 495

Gly Ser Gly Gly Gly Ser Gly Gly Gly Ser Leu Arg Ser Ser Ser Gln
500 505 510

Asn Ser Ser Asp Lys Pro Val Ala His Val Val Ala Asn His Gln Val
515 520 525

Glu Glu Gln Leu Glu Trp Leu Ser Gln Arg Ala Asn Ala Leu Leu Ala
530 535 540

Asn Gly Met Asp Leu Lys Asp Asn Gln Leu Val Val Pro Ala Asp Gly
545 550 555 560

Leu Tyr Leu Val Tyr Ser Gln Val Leu Phe Lys Gly Gln Gly Cys Pro
565 570 575

Asp Tyr Val Leu Leu Thr His Thr Val Ser Arg Phe Ala Ile Ser Tyr
580 585 590

Gln Glu Lys Val Asn Leu Leu Ser Ala Val Lys Ser Pro Cys Pro Lys
595 600 605

Asp Thr Pro Glu Gly Ala Glu Leu Lys Pro Trp Tyr Glu Pro Ile Tyr
610 615 620

Leu Gly Gly Val Phe Gln Leu Glu Lys Gly Asp Gln Leu Ser Ala Glu
625 630 635 640

Val Asn Leu Pro Lys Tyr Leu Asp Phe Ala Glu Ser Gly Gln Val Tyr

Phe Gly Val Ile Ala Leu
660

<210> 18
<211> 318
<212> PRT
<213> Artificial Sequence

<220>
<223> Ubi2-TNF

<400> 18

Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala Gly Ile Gly Met
65 70 75 80

Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val
85 90 95

Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys
100 105 110

Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys Gln
115 120 125

Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu Ser
130 135 140

Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala Ser Gly Gly Gly Gly
145 150 155 160

Gly Ser Leu Arg Ser Ser Ser Gln Asn Ser Ser Asp Lys Pro Val Ala
165 170 175

His Val Val Ala Asn His Gln Val Glu Glu Gln Leu Glu Trp Leu Ser
180 185 190

Gln Arg Ala Asn Ala Leu Leu Ala Asn Gly Met Asp Leu Lys Asp Asn
195 200 205

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Gln Leu Val Val Pro Ala Asp Gly Leu Tyr Leu Val Tyr Ser Gln Val
210 215 220

Leu Phe Lys Gly Gln Gly Cys Pro Asp Tyr Val Leu Leu Thr His Thr
225 230 235 240

Val Ser Arg Phe Ala Ile Ser Tyr Gln Glu Lys Val Asn Leu Leu Ser
245 250 255

Ala Val Lys Ser Pro Cys Pro Lys Asp Thr Pro Glu Gly Ala Glu Leu
260 265 270

Lys Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu
275 280 285

Lys Gly Asp Gln Leu Ser Ala Glu Val Asn Leu Pro Lys Tyr Leu Asp
290 295 300

Phe Ala Glu Ser Gly Gln Val Tyr Phe Gly Val Ile Ala Leu
305 310 315

<210> 19
<211> 325
<212> PRT
<213> Artificial Sequence

<220>
<223> Affilin-IFN

<400> 19

Met Arg Ile Trp Val His Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Asn Pro Lys
50 55 60

Leu Ser Leu His Leu Val Leu Arg Leu Arg Ala Ala Gly Ile Gly Met
65 70 75 80

Gln Ile Phe Val His Thr Gln Thr Gly Lys Thr Ile Thr Leu Glu Val
85 90 95

Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp Lys
100 105 110

Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Trp Ala Gly Lys Gln
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115

120

125

Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gly Trp Gln Ala
130 135 140

Pro Leu His Leu Val Leu Arg Leu Arg Ala Ala Ser Gly Gly Gly Gly
145 150 155 160

Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
165 170 175

Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
180 185 190

Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
195 200 205

Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
210 215 220

Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
225 230 235 240

Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
245 250 255

Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
260 265 270

Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
275 280 285

Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
290 295 300

Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
305 310 315 320

Leu Arg Ser Lys Glu
325

<210> 20
<211> 274
<212> PRT
<213> Artificial Sequence

<220>
<223> SUMO-Affilin

<400> 20

Met Gly Ser Ser His His His His His His Gly Ser Gly Leu Val Pro
1 5 10 15

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Arg Gly Ser Ala Ser Met Ser Asp Ser Glu Val Asn Gln Glu Ala Lys
20 25 30

Pro Glu Val Lys Pro Glu Val Lys Pro Glu Thr His Ile Asn Leu Lys
35 40 45

Val Ser Asp Gly Ser Ser Glu Ile Phe Phe Lys Ile Lys Lys Thr Thr
50 55 60

Pro Leu Arg Arg Leu Met Glu Ala Phe Ala Lys Arg Gln Gly Lys Glu
65 70 75 80

Met Asp Ser Leu Arg Phe Leu Tyr Asp Gly Ile Arg Ile Gln Ala Asp
85 90 95

Gln Thr Pro Glu Asp Leu Asp Met Glu Asp Asn Asp Ile Ile Glu Ala
100 105 110

His Arg Glu Gln Ile Gly Gly Met Arg Ile Trp Val His Thr Leu Thr
115 120 125

Gly Lys Thr Ile Thr Leu Glu Val Glu Pro Ser Asp Thr Ile Glu Asn
130 135 140

Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln Gln
145 150 155 160

Arg Leu Ile Trp Ala Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu Ser
165 170 175

Asp Tyr Asn Ile Asn Pro Lys Leu Ser Leu His Leu Val Leu Arg Leu
180 185 190

Arg Ala Ala Gly Ile Gly Met Gln Ile Phe Val His Thr Gln Thr Gly
195 200 205

Lys Thr Ile Thr Leu Glu Val Glu Pro Ser Asp Thr Ile Glu Asn Val
210 215 220

Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg
225 230 235 240

Leu Ile Trp Ala Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp
245 250 255

Tyr Asn Ile Gly Trp Gln Ala Pro Leu His Leu Val Leu Arg Leu Arg
260 265 270

Ala Ala

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<210> 21
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 21
 gcagggatcc atgcgtatct ggggtgcacac cctgacc

37

<210> 22
 <211> 45
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 22
 tgcagccatc tcgagtcatt aggccgcacg taaacgaaga actaa

45

<210> 23
 <211> 76
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> ubiquitin mutin (G75A/G76A), a ubiquitin moiety used for increasing serum half-life

<400> 23

Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
 1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
 20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
 35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
 50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Ala Ala
 65 70 75

<210> 24
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 24
 ggagatatac atatgcagat ctttg

25

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<210> 25
 <211> 91
 <212> PRT
 <213> Homo sapiens

<400> 25

Glu Val Pro Gln Leu Thr Asp Leu Ser Phe Val Asp Ile Thr Asp Ser
 1 5 10 15

Ser Ile Gly Leu Arg Trp Thr Pro Leu Asn Ser Ser Thr Ile Ile Gly
 20 25 30

Tyr Arg Ile Thr Val Val Ala Ala Gly Glu Gly Ile Pro Ile Phe Glu
 35 40 45

Asp Phe Val Asp Ser Ser Val Gly Tyr Tyr Thr Val Thr Gly Leu Glu
 50 55 60

Pro Gly Ile Asp Tyr Asp Ile Ser Val Ile Thr Leu Ile Asn Gly Gly
 65 70 75 80

Glu Ser Ala Pro Thr Thr Leu Thr Gln Gln Thr
 85 90

<210> 26
 <211> 15
 <212> DNA
 <213> Artificial sequence

<220>
 <223> cis-acting element

<400> 26
 tagtttcact ttccc

15

<210> 27
 <211> 165
 <212> PRT
 <213> Homo sapiens

<400> 27

Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
 1 5 10 15

Leu Leu Ala Gln Met Arg Lys Ile Ser Leu Phe Ser Cys Leu Lys Asp
 20 25 30

Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
 35 40 45

Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
 50 55 60

Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
 65 70 75 80

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Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
85 90 95

Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
100 105 110

Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
115 120 125

Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
130 135 140

Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
145 150 155 160

Leu Arg Ser Lys Glu
165

<210> 28
<211> 165
<212> PRT
<213> Homo sapiens

<400> 28

Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
1 5 10 15

Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
20 25 30

Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
35 40 45

Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
50 55 60

Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
65 70 75 80

Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
85 90 95

Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
100 105 110

Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
115 120 125

Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
130 135 140

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Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
145 150 155 160

Leu Arg Ser Lys Glu
165

<210> 29
<211> 165
<212> PRT
<213> Homo sapiens

<400> 29

Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
1 5 10 15

Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
20 25 30

Arg Arg Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
35 40 45

Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
50 55 60

Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
65 70 75 80

Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
85 90 95

Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
100 105 110

Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
115 120 125

Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
130 135 140

Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
145 150 155 160

Leu Arg Ser Lys Glu
165

<210> 30
<211> 169
<212> PRT
<213> Homo sapiens

<400> 30

Ser Leu Asp Cys Asp Leu Pro Gln Thr His Ser Leu Gly His Arg Arg
Seite 20

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Leu Leu Glu Lys Phe Tyr Ile Glu Leu Phe Gln Gln Met Asn Asp Leu
85 90 95

Glu Ala Cys Val Ile Gln Glu Val Gly Val Glu Glu Thr Pro Leu Met
100 105 110

Asn Glu Asp Ser Ile Leu Ala Val Lys Lys Tyr Phe Gln Arg Ile Thr
115 120 125

Leu Tyr Leu Met Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Ile Met Arg Ser Leu Ser Phe Ser Thr Asn Leu Gln Lys
145 150 155 160

Arg Leu Arg Arg Lys Asp
165

<210> 32
<211> 166
<212> PRT
<213> Homo sapiens

<400> 32

Cys Asp Leu Pro Gln Thr His Ser Leu Gly Asn Arg Arg Ala Leu Ile
1 5 10 15

Leu Leu Ala Gln Met Gly Arg Ile Ser His Phe Ser Cys Leu Lys Asp
20 25 30

Arg His Asp Phe Gly Phe Pro Glu Glu Glu Phe Asp Gly His Gln Phe
35 40 45

Gln Lys Ala Gln Ala Ile Ser Val Leu His Glu Met Ile Gln Gln Thr
50 55 60

Phe Asn Leu Phe Ser Thr Glu Asp Ser Ser Ala Ala Trp Glu Gln Ser
65 70 75 80

Leu Leu Glu Lys Phe Ser Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu
85 90 95

Glu Ala Cys Val Ile Gln Glu Val Gly Val Glu Glu Thr Pro Leu Met
100 105 110

Asn Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr
115 120 125

Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140

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Arg Ala Glu Ile Met Arg Ser Leu Ser Phe Ser Thr Asn Leu Gln Lys
145 150 155 160

Arg Leu Arg Arg Lys Asp
165

<210> 33
<211> 168
<212> PRT
<213> Homo sapiens

<400> 33

Leu Gly Cys Asp Leu Pro Gln Thr His Ser Leu Ser Asn Arg Arg Thr
1 5 10 15

Leu Met Ile Met Ala Gln Met Gly Arg Ile Ser Pro Phe Ser Cys Leu
20 25 30

Lys Asp Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Asp Gly Asn
35 40 45

Gln Phe Gln Lys Ala Gln Ala Ile Ser Val Leu His Glu Met Ile Gln
50 55 60

Gln Thr Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Thr Trp Asp
65 70 75 80

Glu Thr Leu Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn
85 90 95

Asp Leu Glu Ala Cys Met Met Gln Glu Val Gly Val Glu Asp Thr Pro
100 105 110

Leu Met Asn Val Asp Ser Ile Leu Thr Val Arg Lys Tyr Phe Gln Arg
115 120 125

Ile Thr Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu
130 135 140

Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Ala Asn Leu
145 150 155 160

Gln Glu Arg Leu Arg Arg Lys Glu
165

<210> 34
<211> 157
<212> PRT
<213> Homo sapiens

<400> 34

Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Lys Pro Val Ala His Val
Seite 23

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10

1 5 15
Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn Arg Arg
20 25 30
Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp Asn Gln Leu
35 40 45
Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
50 55 60
Lys Gly Gln Gly Cys Pro Ser Thr His Val Leu Leu Thr His Thr Ile
65 70 75 80
Ser Arg Ile Ala Val Ser Tyr Gln Thr Lys Val Asn Leu Leu Ser Ala
85 90 95
Ile Lys Ser Pro Cys Gln Arg Glu Thr Pro Glu Gly Ala Glu Ala Lys
100 105 110
Pro Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Lys
115 120 125
Gly Asp Arg Leu Ser Ala Glu Ile Asn Arg Pro Asp Tyr Leu Asp Phe
130 135 140
Ala Glu Ser Gly Gln Val Tyr Phe Gly Ile Ile Ala Leu
145 150 155

<210> 35
<211> 156
<212> PRT
<213> Mus musculus

<400> 35

Leu Arg Ser Ser Ser Gln Asn Ser Ser Asp Lys Pro Val Ala His Val
1 5 10 15
Val Ala Asn His Gln Val Glu Glu Gln Leu Glu Trp Leu Ser Gln Arg
20 25 30
Ala Asn Ala Leu Leu Ala Asn Gly Met Asp Leu Lys Asp Asn Gln Leu
35 40 45
Val Val Pro Ala Asp Gly Leu Tyr Leu Val Tyr Ser Gln Val Leu Phe
50 55 60
Lys Gly Gln Gly Cys Pro Asp Tyr Val Leu Leu Thr His Thr Val Ser
65 70 75 80
Arg Phe Ala Ile Ser Tyr Gln Glu Lys Val Asn Leu Leu Ser Ala Val
85 90 95

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Lys Ser Pro Cys Pro Lys Asp Thr Pro Glu Gly Ala Glu Leu Lys Pro
100 105 110

Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Lys Gly
115 120 125

Asp Gln Leu Ser Ala Glu Val Asn Leu Pro Lys Tyr Leu Asp Phe Ala
130 135 140

Glu Ser Gly Gln Val Tyr Phe Gly Val Ile Ala Leu
145 150 155

<210> 36
<211> 156
<212> PRT
<213> Rattus norvegicus

<400> 36

Leu Arg Ser Ser Ser Gln Asn Ser Ser Asp Lys Pro Val Val His Val
1 5 10 15

Val Ala Asn His Gln Ala Glu Glu Gln Leu Glu Trp Leu Ser Gln Arg
20 25 30

Ala Asn Ala Leu Leu Ala Asn Gly Met Asp Leu Lys Asp Asn Gln Leu
35 40 45

Val Val Pro Ala Asp Gly Leu Tyr Leu Ile Tyr Ser Gln Val Leu Phe
50 55 60

Lys Gly Gln Gly Cys Pro Asp Tyr Val Leu Leu Thr His Thr Val Ser
65 70 75 80

Arg Phe Ala Thr Ser Tyr Gln Glu Lys Val Ser Leu Leu Ser Ala Ile
85 90 95

Lys Ser Pro Cys Pro Lys Asp Thr Pro Glu Gly Ala Glu Leu Lys Pro
100 105 110

Trp Tyr Glu Pro Met Tyr Leu Gly Gly Val Ser Gln Leu Glu Lys Gly
115 120 125

Asp Leu Leu Ser Ala Glu Val Asn Leu Pro Lys Tyr Leu Asp Ile Thr
130 135 140

Glu Ser Gly Gln Val Tyr Phe Gly Val Ile Ala Leu
145 150 155

<210> 37
<211> 492
<212> PRT

<213> Artificial Sequence

<220>

<223> sCTNF, murine

<400> 37

Leu Arg Ser Ser Ser Gln Asn Ser Ser Asp Lys Pro Val Ala His Val
 1 5 10 15

Val Ala Asn His Gln Val Glu Glu Gln Leu Glu Trp Leu Ser Gln Arg
 20 25 30

Ala Asn Ala Leu Leu Ala Asn Gly Met Asp Leu Lys Asp Asn Gln Leu
 35 40 45

Val Val Pro Ala Asp Gly Leu Tyr Leu Val Tyr Ser Gln Val Leu Phe
 50 55 60

Lys Gly Gln Gly Cys Pro Asp Tyr Val Leu Leu Thr His Thr Val Ser
 65 70 75 80

Arg Phe Ala Ile Ser Tyr Gln Glu Lys Val Asn Leu Leu Ser Ala Val
 85 90 95

Lys Ser Pro Cys Pro Lys Asp Thr Pro Glu Gly Ala Glu Leu Lys Pro
 100 105 110

Trp Tyr Glu Pro Ile Tyr Leu Gly Gly Val Phe Gln Leu Glu Lys Gly
 115 120 125

Asp Gln Leu Ser Ala Glu Val Asn Leu Pro Lys Tyr Leu Asp Phe Ala
 130 135 140

Glu Ser Gly Gln Val Tyr Phe Gly Val Ile Ala Leu Gly Gly Gly Ser
 145 150 155 160

Gly Gly Gly Ser Gly Gly Gly Ser Leu Arg Ser Ser Ser Gln Asn Ser
 165 170 175

Ser Asp Lys Pro Val Ala His Val Val Ala Asn His Gln Val Glu Glu
 180 185 190

Gln Leu Glu Trp Leu Ser Gln Arg Ala Asn Ala Leu Leu Ala Asn Gly
 195 200 205

Met Asp Leu Lys Asp Asn Gln Leu Val Val Pro Ala Asp Gly Leu Tyr
 210 215 220

Leu Val Tyr Ser Gln Val Leu Phe Lys Gly Gln Gly Cys Pro Asp Tyr
 225 230 235 240

Val Leu Leu Thr His Thr Val Ser Arg Phe Ala Ile Ser Tyr Gln Glu

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<220>
 <223> PCR primer
 <400> 38
 ctgcgatcc accgccacct gcggcacgta accgcagg 38

<210> 39
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer
 <400> 39
 gcaggaattc atgcagatct tcgtgaaaac c 31

<210> 40
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer
 <400> 40
 gcacgtctc caacgaagaa ctaaattgtaa gg 32

<210> 41
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer
 <400> 41
 gcacgtctc ccgtttacgt gcagcaagcg g 31

<210> 42
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer
 <400> 42
 gctgcctgca gtcattattc tttgctacgc 30

<210> 43
 <211> 166
 <212> PRT
 <213> Homo sapiens

<400> 43
 Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
 1 5 10 15
 Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
 20 25 30

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Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu Gln
35 40 45

Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
50 55 60

Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
65 70 75 80

Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile Asn
85 90 95

His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
100 105 110

Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
115 120 125

Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp Thr
130 135 140

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg Leu
145 150 155 160

Thr Gly Tyr Leu Arg Asn
165

<210> 44
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 44
gcagggtctc acacccgcgg cacgtaaacg aagaac

36

<210> 45
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 45
ttttggtctc atggtatgtg gatctgggtg cacaccctga cc

42

<210> 46
<211> 39
<212> DNA
<213> Artificial sequence

<220>

<223> PCR Primer

<400> 46
 aaaaggatcc tcattaggcc gcacgtaac gaagaacta

39

<210> 47
 <211> 133
 <212> PRT
 <213> Homo sapiens
 <400> 47

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 48
 <211> 149
 <212> PRT
 <213> Mus musculus
 <400> 48

Ala Pro Thr Ser Ser Ser Thr Ser Ser Ser Thr Ala Glu Ala Gln Gln
 1 5 10 15

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln His Leu Glu Gln Leu Leu
 20 25 30

Met Asp Leu Gln Glu Leu Leu Ser Arg Met Glu Asn Tyr Arg Asn Leu
 35 40 45

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Lys Leu Pro Arg Met Leu Thr Phe Lys Phe Tyr Leu Pro Lys Gln Ala
 50 55 60

Thr Glu Leu Lys Asp Leu Gln Cys Leu Glu Asp Glu Leu Gly Pro Leu
 65 70 75 80

Arg His Val Leu Asp Leu Thr Gln Ser Lys Ser Phe Gln Leu Glu Asp
 85 90 95

Ala Glu Asn Phe Ile Ser Asn Ile Arg Val Thr Val Val Lys Leu Lys
 100 105 110

Gly Ser Asp Asn Thr Phe Glu Cys Gln Phe Asp Asp Glu Ser Ala Thr
 115 120 125

Val Val Asp Phe Leu Arg Arg Trp Ile Ala Phe Cys Gln Ser Ile Ile
 130 135 140

Ser Thr Ser Pro Gln
 145